



New Space Exploration Vision

*"This cause of exploration and discovery is not an option we choose;
it is a desire written in the human heart." – President Bush*



January 16, 2004



Guiding Principles for Exploration

- **Pursue Compelling Questions**

- Exploration of the solar system will be guided by compelling questions of scientific and societal importance.
- Consistent with the NASA Vision and Mission, NASA exploration programs will seek profound answers to questions of our origins, whether life exists beyond Earth, and how we could live on other worlds.

- **Across Multiple Worlds**

- NASA will make progress across a broad front of destinations.
- Consistent with recent discoveries, NASA will focus on likely habitable environments at the planet Mars, the moons of Jupiter, and in other solar systems.
- Where advantageous, NASA will also make use of destinations like the Moon and near-Earth asteroids to test and demonstrate new exploration capabilities.

- **Employ Human and Robotic Capabilities**

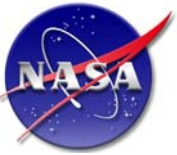
- NASA will send human and robotic explorers as partners, leveraging the capabilities of each where most useful.
- Robotic explorers will visit new worlds first, to obtain scientific data, demonstrate breakthrough technologies, identify space resources, and send tantalizing imagery back to Earth.
- Human explorers will follow to conduct in-depth research, direct and upgrade advanced robotic explorers, prepare space resources, and demonstrate new exploration capabilities



Guiding Principles for Exploration (cont.)

- **For Sustainable Exploration**
 - NASA will pursue breakthrough technologies, investigate planetary resources, and align ongoing programs to develop sustainable, affordable, and flexible solar system exploration strategies.
 - The vision is not about one-time events and, thus, costs will be reduced to maintain the affordability of the vision

- **Starting Now**
 - NASA will pursue this vision as our highest priority.
 - Consistent with the FY 2005 Budget, NASA will immediately begin to realign programs and organization, demonstrate new technical capabilities, and undertake new robotic precursor missions to the Moon and Mars before the end of the decade.



Key Elements of New Space Policy

- **Space Shuttle**
 - Return the Space Shuttle to flight and plan to retire it by the end of this decade, following the completion of its role in the construction of the International Space Station
- **International Space Station**
 - Complete assembly,
 - Refocus research to exploration factors affecting astronaut health, and
 - Acquire crew and cargo systems, as necessary, during and after availability of Shuttle.
- **Crew Exploration Vehicle**
 - Develop a CEV to travel beyond low Earth orbit, the first new U.S. human space flight vehicle since the 1980s.
 - Undertake first test flight is planned by the end of this decade in order to provide an operational capability to support human exploration missions no later than 2014.
- **Lunar Exploration**
 - Begin robotic missions to the Moon by 2008, followed by a period of evaluating lunar resources and technologies for exploration.
 - Begin human expeditions to the Moon in the 2015 – 2020 timeframe.



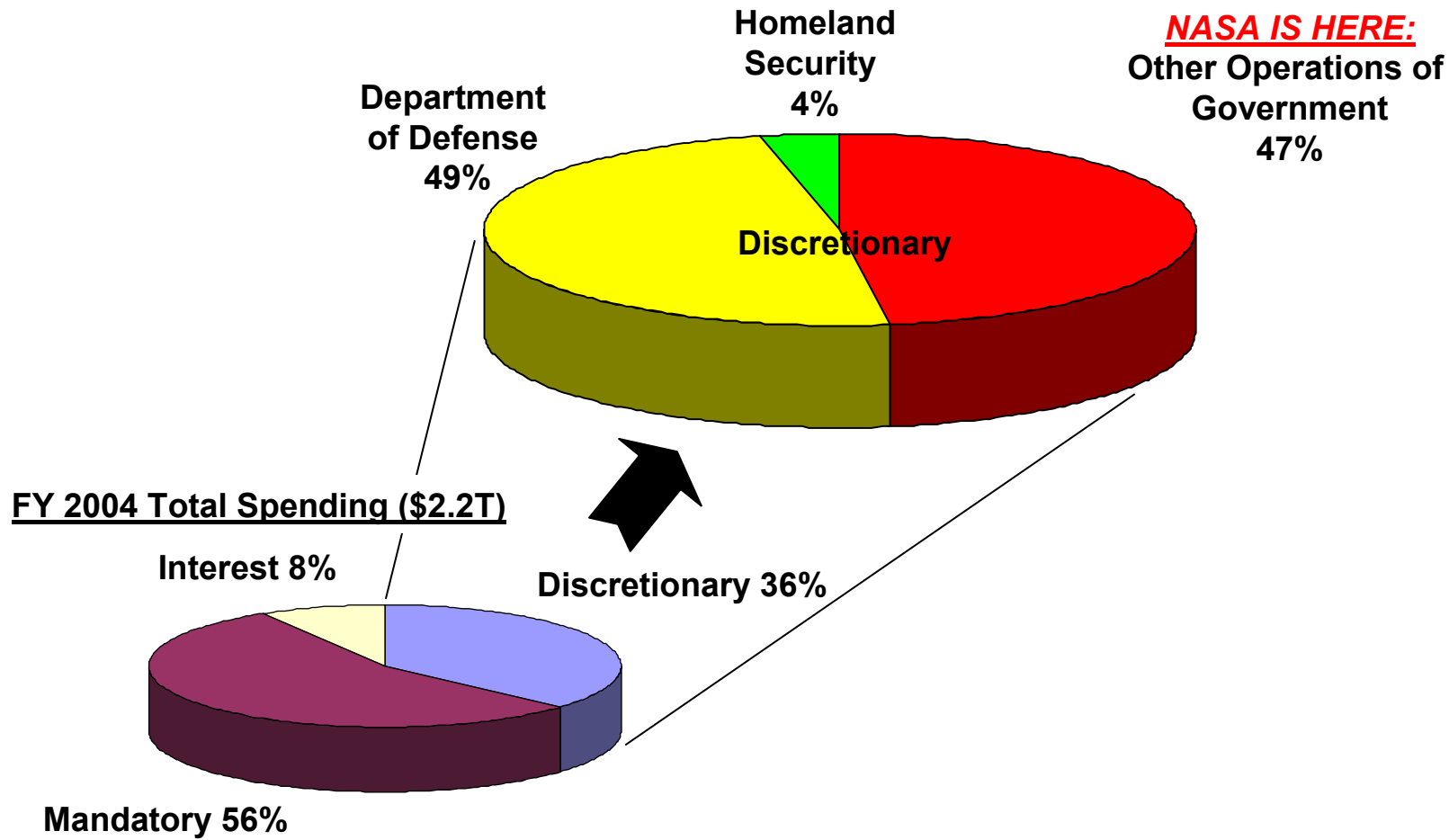
Key Elements of New Space Policy (cont.)

- **Mars Exploration**
 - Conduct robotic exploration of Mars to search for evidence of life, to understand the history of the solar system, and to prepare for future human exploration.
 - Timing of human missions to Mars will be based on available budgetary resources, experience and knowledge gained from lunar exploration, discoveries by robotic spacecraft at Mars and other solar system locations, and development of required technologies and know-how.
- **Other Solar System Exploration**
 - Conduct robotic exploration across the solar system for scientific purposes and to support human exploration.
 - In particular, explore Jupiter's moons, asteroids and other bodies to search for evidence of life, to understand the history of the solar system, and to search for resources;
- **Exploration Beyond**
 - Conduct advanced telescope searches for Earth-like planets and habitable environments around other stars;
- **Enabling Capabilities**
 - Develop and demonstrate power generation, propulsion, life support, and other key capabilities required to support more distant, more capable, and/or longer duration human and robotic exploration of Mars and other destinations.



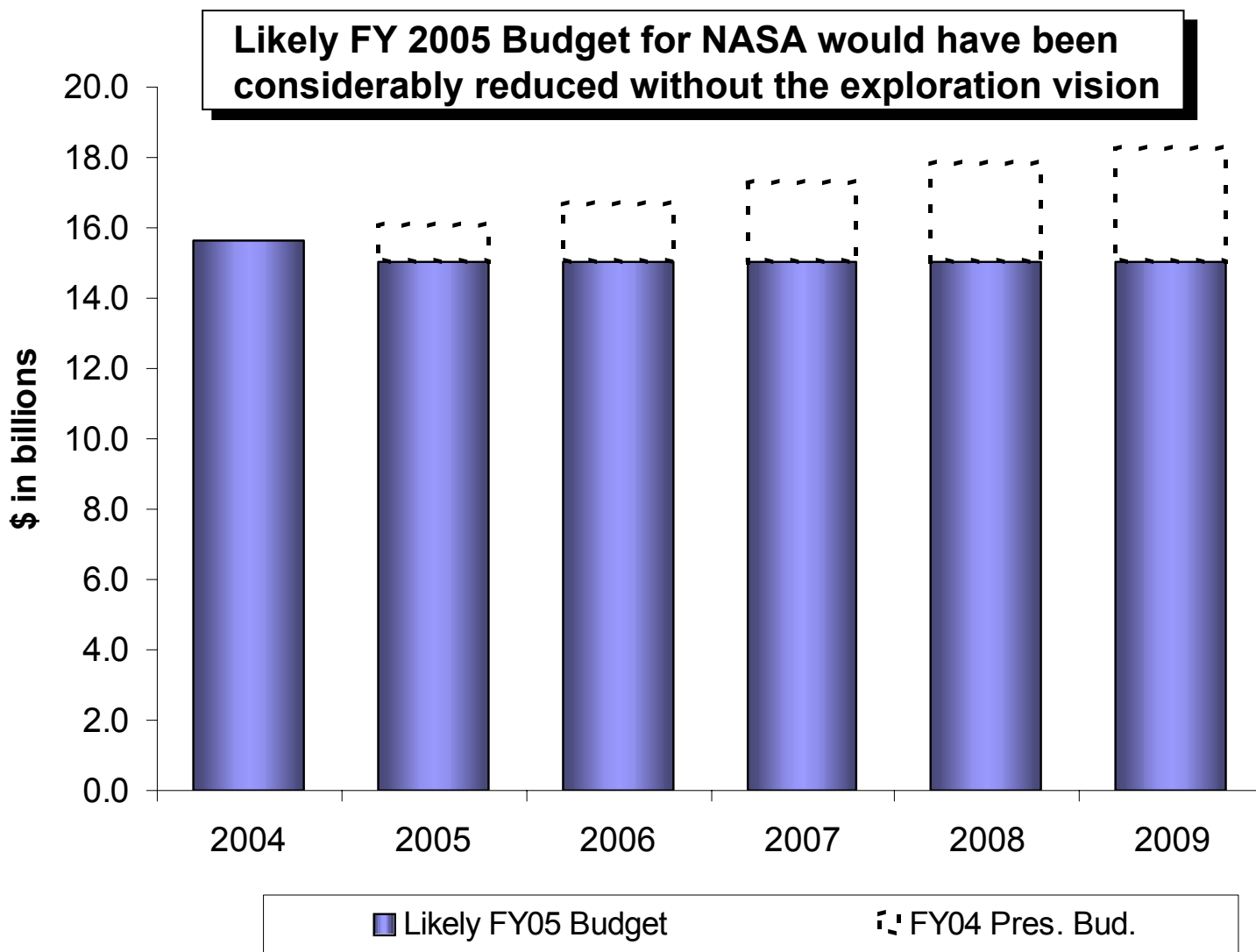
Constrained Budget Environment

President committed to limiting discretionary spending, while placing high priority on Defense and Homeland Security spending



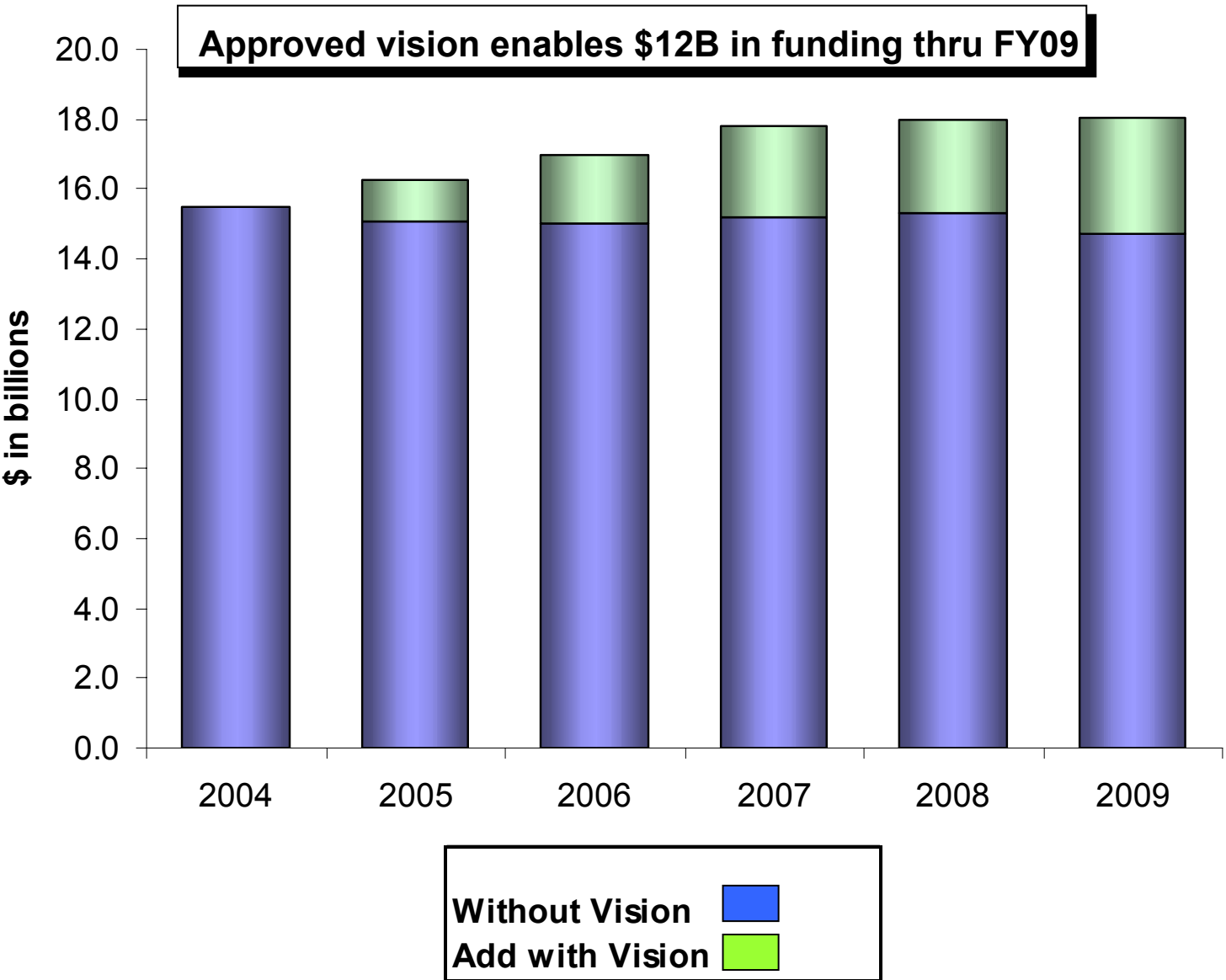


Facing Major Cuts Without the New Vision





Budget with Approved Exploration Vision



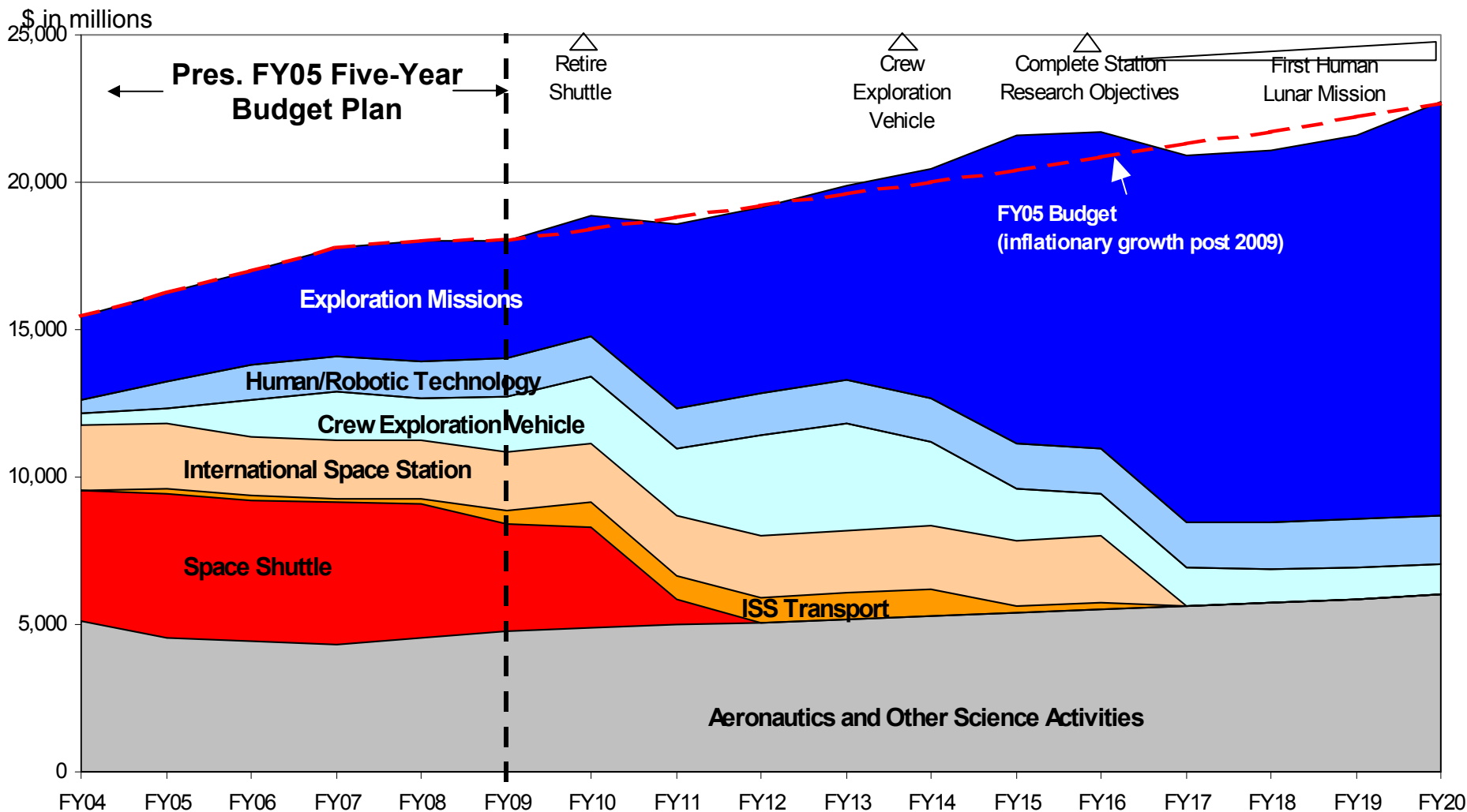


Budget Strategy for Exploration Vision

- **NASA's new exploration plan is affordable in both the short-term and long-term.**
 - Budget will increase by 5% per year over the next three years, and at about 2% (inflation) per year thereafter.
 - NASA annual budget is currently about 0.7 percent of the total Federal budget, with the annual cost per taxpayer equivalent to a month of cable, family trip to a movie, or 15 cents per day.
- **NASA will be able to carry out a robust exploration program with provided budget increases.**
 - NASA will reallocate resources within its existing budget in three main ways:
 - NASA will realign existing programs as necessary to enable the vision.
 - NASA will retire the Shuttle to free up billions of dollars in the next decade.
 - NASA will focus on tech innovations that reduce the cost of sustained space operations.
 - Shift in funding reflects the priority of the new national vision for human and robotic exploration of the solar system and beyond



Strategy Based on Long-Term Affordability



NOTE: Exploration missions – Robotic and eventual human missions to Moon, Mars, and beyond
Human/Robotic Technology – Technologies to enable development of exploration space systems
Crew Exploration Vehicle – Transportation vehicle for human explorers
ISS Transport – US and foreign launch systems to support Space Station needs especially after Shuttle retirement



Next Steps

- **Presidential Space Commission**

- Commission being formed under chairmanship of Peter Aldridge to examine the implementation of the vision.
- Report due in four months

- **Organization**

- NASA will organize as necessary to implement the vision
- A new enterprise, Office of Exploration Systems, will be responsible for R&T and development of human systems for exploration, including robotic precursor missions to the moon
- Office of Aeronautics formed to maintain focus on aeronautical research

- **Budget**

- President's FY 2005 Budget to be released on February 2nd
- Exploration Vision Document will be released along with FY05 Budget to link vision to our programs
- FY 2006 Budget will begin to address uncertainties in implementing the vision, for example, refocusing programs, assigning program responsibilities, and addressing institutional issues



Summary of New Vision

- **Benefits the Nation**
 - Makes needed decisions to secure long-term US space leadership
 - Encourages innovation and strengthens industrial base
 - Pursues compelling science and inspires the next generation of explorers
- **Refocuses NASA**
 - Establishes exciting long-term vision
 - Integrates robotic and human exploration programs around focused science goals
 - Responds to CAIB Recommendations (Shuttle retirement, new long-term goal)
- **Provides exciting set of major milestones**